



# INSTRUCTIONS

MOBILE WORKSTATION

**WM-DP1**

# Contents

|                                                             |           |
|-------------------------------------------------------------|-----------|
| <b>Important Information — Please Read Before Use</b> ..... | <b>2</b>  |
| Intended use .....                                          | 2         |
| Instruction manual .....                                    | 2         |
| Signal words .....                                          | 2         |
| <b>Chapter 1 Standard Set and Accessories</b> .....         | <b>3</b>  |
| 1.1 Optional accessories .....                              | 4         |
| <b>Chapter 2 Warnings and Cautions</b> .....                | <b>5</b>  |
| <b>Chapter 3 Symbols</b> .....                              | <b>8</b>  |
| <b>Chapter 4 Preparation for Use</b> .....                  | <b>9</b>  |
| 4.1 General information .....                               | 9         |
| 4.2 Shelf positions .....                                   | 12        |
| 4.3 Remote switch .....                                     | 13        |
| 4.4 Equipment installation .....                            | 14        |
| 4.5 Cable hanger and blanking caps .....                    | 16        |
| 4.6 Water container holder .....                            | 17        |
| 4.7 Rear panels .....                                       | 17        |
| 4.8 Fitting the MAJ-181 restrictor .....                    | 18        |
| <b>Chapter 5 Inspection</b> .....                           | <b>21</b> |
| <b>Chapter 6 Operation</b> .....                            | <b>22</b> |
| 6.1 Operation .....                                         | 22        |
| 6.2 Manoeuvring and Transportation .....                    | 24        |
| <b>Chapter 7 Care, Storage and Maintenance</b> .....        | <b>26</b> |
| 7.1 Care .....                                              | 26        |
| 7.2 Storage .....                                           | 27        |
| 7.3 Maintenance .....                                       | 27        |
| <b>Chapter 8 Specifications</b> .....                       | <b>28</b> |
| 8.1 WM-DP1 mobile workstation .....                         | 28        |
| 8.2 Separation transformer (WM-T1) .....                    | 28        |
| <b>Chapter 9 Spares</b> .....                               | <b>30</b> |
| <b>Chapter 10 Technical Description</b> .....               | <b>31</b> |
| <b>Chapter 11 Troubleshooting</b> .....                     | <b>33</b> |
| <b>Chapter 12 End of Life</b> .....                         | <b>34</b> |

# ***Important Information — Please Read Before Use***

## ***Intended use***

The Olympus WM-DP1 mobile workstation is intended for use in medical facilities under the direction of a trained physician, and has been designed to be used with a range of Olympus equipment to facilitate GI endoscopy, endoscopic ultrasound, respiratory and surgical endoscopic procedures. Do not use the equipment for any purpose other than its intended application.

The safety and performance of an endoscopic system depends not only on the endoscope but also on the ancillary equipment used with it. Ensure any ancillary equipment is compatible with the endoscope and other equipment used.

## ***Instruction manual***

Please read this manual carefully before attempting to use the Olympus WM-DP1 mobile workstation as it contains important information on the proper care, handling and use of the equipment. In addition, read the manuals of any other units (light source, endoscope, etc.) that form part of the system.

If you have any questions or comments regarding the information in this manual, please contact Olympus. These instructions should be retained for reference during the life of the product.

## ***Signal words***

The following signal words are used throughout this manual:

### **WARNING**

Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

### **CAUTION**

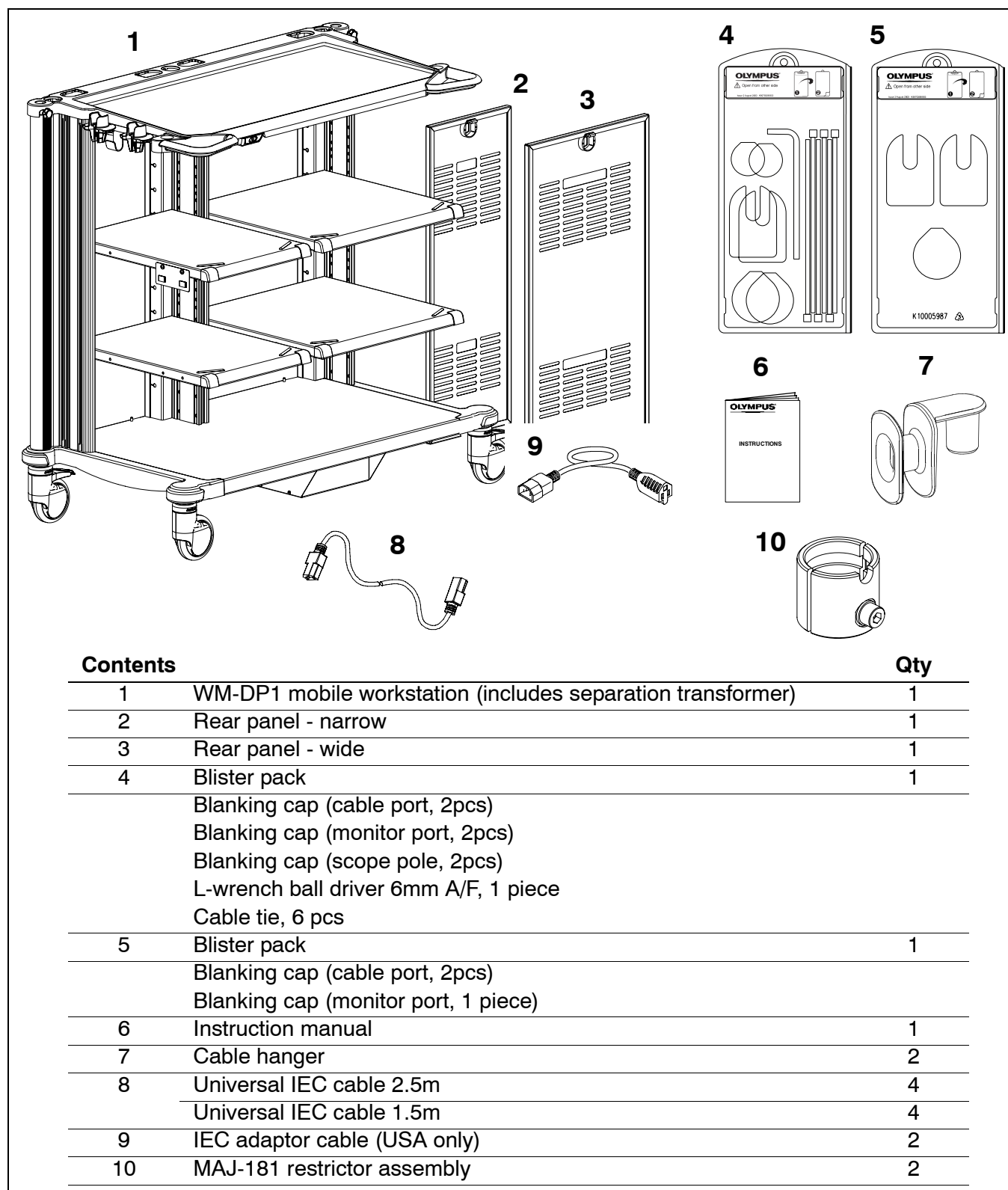
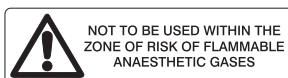
Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices or potential equipment damage.

### **NOTE**

Indicates additional helpful information.

## Chapter 1 Standard Set and Accessories

Please refer to the standard set below and check that all items are present. Contact Olympus if any parts are damaged or missing. Workstations that are fitted with antistatic castors can be identified by the following label affixed to the rear of each shelf.



## 1.1 Optional accessories

The following items are available as optional accessories. Each accessory is supplied complete with the necessary fixings, tools and instructions to enable assembly to the mobile workstation.

| Description                                | Ref No.  | Recommended use |    |     |
|--------------------------------------------|----------|-----------------|----|-----|
|                                            |          | GI              | SP | EUS |
| 14" CRT Platform WM-NP1                    | MAJ-1620 | ○               | ○  | ○   |
| 20" CRT Platform WM-NP1                    | MAJ-1621 | ○               | ○  | ○   |
| Cable retaining hook                       | MAJ-195  | ○               | ○  | ○   |
| CO <sub>2</sub> cylinder bracket kit large | MAJ-188  | —               | ○  | —   |
| CO <sub>2</sub> cylinder bracket kit small | MAJ-1614 | —               | ○  | —   |
| Drawer pack narrow deep                    | MAJ-194  | ○               | ○  | ○   |
| Drawer pack narrow standard                | MAJ-193  | ○               | ○  | ○   |
| Drawer pack wide deep                      | MAJ-1612 | ○               | ○  | ○   |
| Drawer pack wide standard                  | MAJ-1611 | ○               | ○  | ○   |
| ECS cable kit 10m                          | MAJ-186  | ○               | —  | ○   |
| ECS cable kit 15m                          | MAJ-1616 | ○               | —  | ○   |
| Equipment support rail                     | MAJ-190  | ○               | ○  | ○   |
| EU-C60/2000 shelf kit                      | MAJ-1627 | —               | —  | ○   |
| EUS Arm Mount Kit WM-P1                    | MAJ-1626 | —               | —  | ○   |
| IV pole kit                                | MAJ-187  | —               | ○  | —   |
| Keyboard arm side mounted                  | MAJ-180  | ○               | ○  | —   |
| Keyboard tray sliding                      | MAJ-179  | ○               | ○  | ○   |
| EU-M30 Keyboard Tray                       | MAJ-1625 | —               | —  | ○   |
| LCD handle                                 | MAJ-1610 | ○               | ○  | ○   |
| LCD monitor arm                            | MAJ-181  | ○               | ○  | ○   |
| Nurse's control panel arm (long)           | MAJ-1628 | ○               | ○  | ○   |
| Nurse's control panel arm (short)          | MAJ-1624 | —               | —  | ○   |
| Scope pole kit                             | MAJ-183  | ○               | ○  | ○   |
| Shelf kit narrow                           | MAJ-198  | ○               | ○  | ○   |
| Shelf kit wide                             | MAJ-199  | ○               | ○  | ○   |
| Universal display arm CRT                  | MAJ-1613 | —               | —  | ○   |
| Universal stowage container                | MAJ-185  | ○               | ○  | ○   |
| Videoscope cable holder                    | MAJ-1630 | ○               | ○  | ○   |

○ compatible — incompatible

### CAUTION

Do not attempt to install any other accessories on the WM-DP1.

## **Chapter 2 Warnings and Cautions**

### **WARNING**

- The WM-DP1 mobile workstation should only be used in a medical facility under the direction of a trained physician.
- Explosion hazard - never install or use the WM-DP1 mobile workstation within the zone of risk of flammable gases. If the workstation is fitted with antistatic castors (see Chapter 8), none of the medical electrical equipment with which the workstation is intended to be used is 'AP' or 'APG' rated, therefore never install or use the WM-P1 series mobile workstation within the zone of risk of flammable gases.
- To prevent patient shock, the combination of equipment used on the WM-DP1 mobile workstation should never be applied directly to the heart.
- If the fuse holder cap on the transformer is not fitted correctly, there is a possibility that the fuse holder will overheat. When replacing the fuse, ensure the fuse holder cap (Figure 4.3) is tightened using a 6mm to 8mm flat bladed screwdriver. The recommended tightening torque is 0.5Nm.
- Should the equipment become soiled with blood or other potentially infectious materials, first wipe off all gross debris and then decontaminate the equipment using a surface disinfectant, otherwise, blood, mucus and other potentially infectious material from the patient could pose an infection risk. Confirm that the equipment is completely dry before use.
- Use personal protective equipment to guard against dangerous chemicals and potentially infectious material, otherwise, blood, mucus and other potentially infectious material from the patient could pose an infection risk. During cleaning, wear appropriate protective equipment, such as eye wear, face mask, moisture-resistant clothing and chemical-resistant gloves that fit properly and are long enough so that your skin is not exposed.
- To prevent user or patient cross-contamination, do not hang contaminated endoscopes on the scope hanger.
- The WM-DP1 should be used in accordance with the following. Otherwise, the workstation will be 'top heavy' and may lose stability and topple, causing equipment damage and/or personal injury.
  - Two MAJ-181 restrictors are supplied which must be fitted to MAJ-181 LCD monitor arm(s) if used (refer to section 4.8).
  - LCD monitor arms and monitors should be installed after all other equipment is installed on an appropriate place on the workstation.
  - LCD monitor arms should not be installed or used to the rear of the workstation, see Figure 2.1.
  - Confirm that the workstation does not lose stability when the monitor arm is extended. If the workstation looks unstable, relocate heavy equipment from the upper shelf to the bottom shelf.

- Thoroughly review the manuals of all other equipment which will be used. The manuals contain essential information on using this equipment safely and effectively.

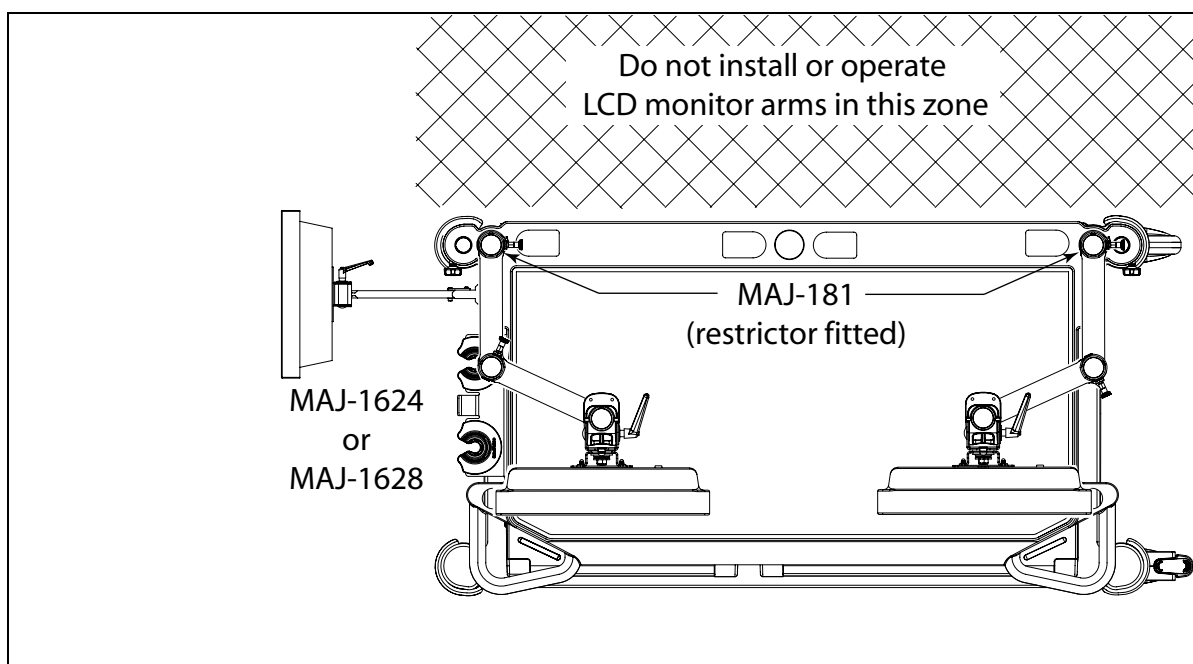


**Figure 2.1**

**CAUTION**

- Do not exceed the load capacity detailed in Chapter 8.
- Do not lean or stand on any part of the mobile workstation or accessory as failure of the product may result.
- When assembling equipment onto the mobile workstation, the installation should meet the requirements of EN IEC 60601-1-1:2001, the safety standard for medical electrical systems.
- When configuring a system, the user should ensure that there is sufficient spare equipment available that in the event of a fault in any part of the system, the endoscopy procedure may be completed or terminated without endangering the patient.
- Before commissioning an installation including a separation transformer, ensure its rating will not be exceeded by the equipment connected to it.
- When installing the mobile workstation in the procedure or operating room, ensure that the mains cable has sufficient slack that it cannot be pulled taught as the mobile workstation is moved around the working area. If necessary, relocate the mains connector to a nearer supply socket.
- Section 6.2 Manoeuvring and Transportation gives detailed instructions and precautions which must be read and understood before attempting to move the mobile workstation.
- Spray type medical agents, such as lubricants, anaesthetic or alcohol, should be used away from the mobile workstation.

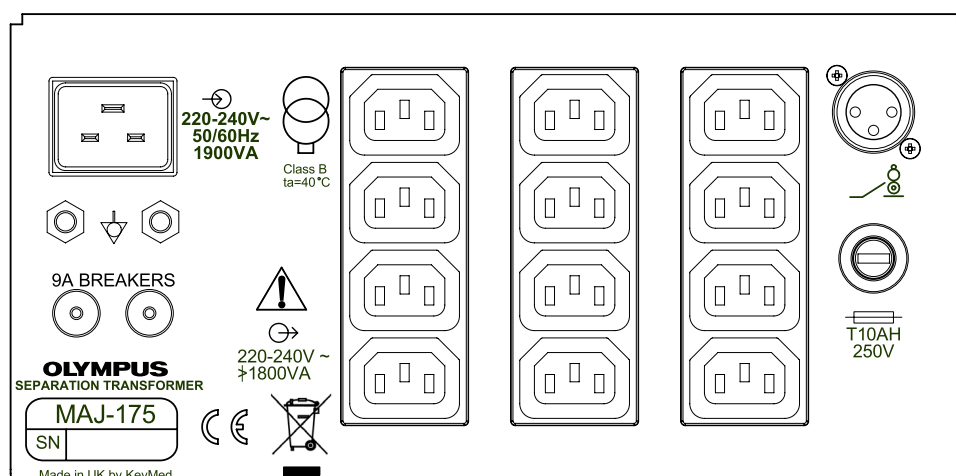
- Keep open containers of liquid away from electrical equipment used on the mobile workstation to prevent operator electrical shock and equipment damage. Do not use the system if liquid has entered the equipment.
- To minimise risk of injury, it is recommended that heavy items are placed on the mobile workstation by two people working together. This is particularly important when placing a monitor on the optional monitor platform (if fitted). Ensure electrical items used on the mobile workstation are positioned centrally on the shelves.
- Never place any items on top of a monitor (if fitted) as these may topple when the mobile workstation is moved.
- Where fitted, the electrical resistance of the conductive antistatic castors should be tested at regular intervals in accordance with ISO 2878 to assess antistatic effectiveness.
- Where antistatic castors are fitted, avoid contact of the castor wheels with oil and avoid a build up of floor cleaning wax and polish as these will impair the antistatic effectiveness of the castors.
- Store and use the WM-DP1 mobile workstation within the environmental conditions described in Chapter 8; failure to do so may lead to equipment malfunction or failure.
- There are no operator-serviceable components on the WM-DP1 mobile workstation. Refer servicing to qualified service personnel.
- To minimise the risk of injury and/or damage, do not fit accessories other than those described in Section 1.1 to the WM-DP1 mobile workstation.

## Chapter 3 Symbols

The following symbols are used on the separation transformer

|                                                                                     |                                                                |                                                                                     |                                                                          |
|-------------------------------------------------------------------------------------|----------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------|
|    | Refer to instructions                                          |    | Potential equalisation terminal                                          |
|    | Input                                                          |    | Output                                                                   |
|    | Not exceeding                                                  | $T_a=40^{\circ}\text{C}$                                                            | Maximum ambient temperature                                              |
|    | Standby position                                               |    | Fuse (output)                                                            |
|    | Output ON position                                             |    | Remote switch                                                            |
|  | Non-inherently short circuit proof separation transformer      | Class B                                                                             | Insulation temperature rating of transformer according to IEC 60085:2004 |
|  | Unit complies with relevant European directives (MAJ-175 only) |  | Disposal conditions - see End of Life (Chapter 12) (MAJ-175 only)        |

View of the separation transformer rear panel



**NOTE**

MAJ-175 (220-240V) is shown. Other versions are similar.

## **Chapter 4 Preparation for Use**

### **NOTE**

- Multiple fixing positions are provided enabling the shelves to be raised or lowered to accommodate varying equipment configurations (see 4.2).
- The mobile workstation is designed for use with Olympus OEV LCD monitors and other monitors that meet the VESA standard. Contact Olympus regarding compatibility of other monitors.

### **4.1 General information**

Installation of endoscopic video systems requires an understanding of EN IEC 60601-1-1:2001, the international collateral standard for the safety of medical electrical systems.

This standard requires systems to meet the leakage current requirements of the general medical electrical safety standard, EN IEC 60601-1, which allows a maximum earth leakage current of 0.5mA in normal condition.

A separation transformer is required under certain circumstances, as combined earth leakage currents may result in excessive enclosure leakage current under single fault conditions, such as the interruption of a common protective earth path.

In order to meet EN IEC 60601-1-1:2001, a separation transformer will be required in a system under one of the following conditions:

- (i) Ancillary equipment that does not meet the leakage current requirements of EN IEC 60601-1 is used (or could be used) within the 'patient environment' (as defined in EN IEC 60601-1-1:2001, that is within a 1.5m radius of, or 2.5m above, the patient bed). The separation transformer must be used to supply the ancillary equipment, but may also be used to supply medical electrical equipment, as long as the maximum transformer rating is not exceeded.
- (ii) The total earth leakage current from a combination of medical equipment is above 0.5mA. The separation transformer must be used to supply sufficient of the medical electrical equipment to reduce the total system earth leakage current to below the above limit, as long as the maximum transformer rating is not exceeded. High intensity light sources use arc lamps, which require a high start-up current. It is not recommended for these to be supplied from the isolation transformer, otherwise its maximum rating may be exceeded. The transformer may also be used to supply ancillary equipment forming part of the system as long as the maximum transformer rating is not exceeded.

Some system installations, for instance those using two mobile workstations, may require two separation transformers to be fitted.

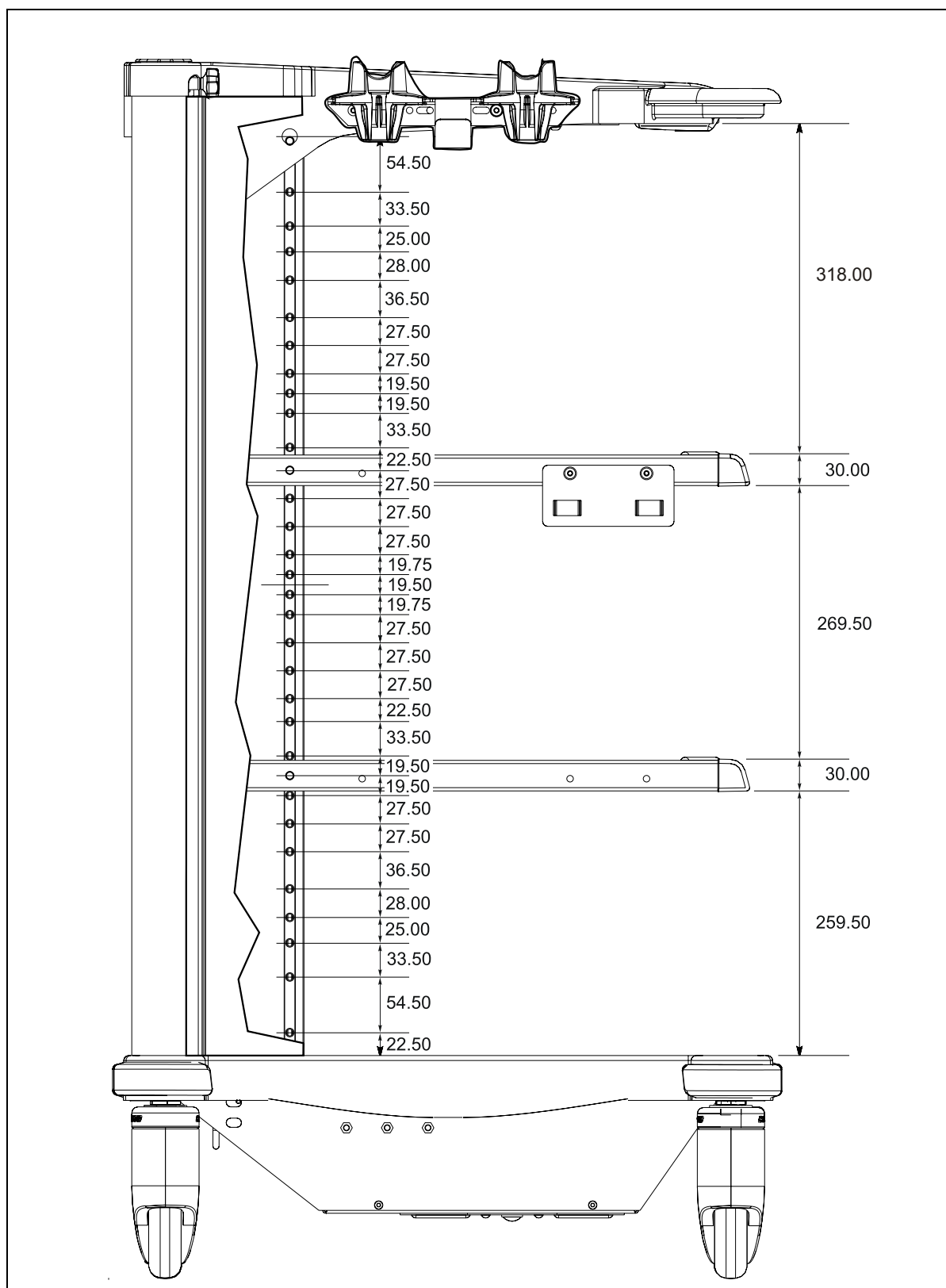
**NOTE**

- The total impedance of the protective earth path for a system may be up to 0.4Ω or higher if the conditions of clause 18 g) of EN IEC 60601-1 are satisfied.
- The power outlets should only be used for powering equipment which forms part of the endoscopy imaging system.
- All equipment forming part of the system should be powered from the transformer, unless appropriate isolation is employed as described in Annex BBB of EN IEC 60601-1-1:2001. This particularly applies where ancillary equipment as described in (i) forming part of the system is remotely situated.

**CAUTION**

- Failure to observe either of the above mentioned points could result in the isolation of the entire system being compromised, defeating the protection provided by the transformer in a single fault condition.

Additional fixings are provided (Figure 4.1) to facilitate shelf adjustment or the fitting of the optional drawer pack(s).



### Figure 4.1

## 4.2 Shelf positions

**NOTE**

The WM-DP1 mobile workstation is supplied with the shelves fitted as shown in Figure 4.1. It is recommended that shelves are repositioned, if required, before commencing equipment installation as described below.

1. Position the mobile workstation on a flat surface and apply both castor brakes (diagonally opposed).
2. Referring to Figure 4.2, use the 6mm A/F L-wrench to remove the four M8 screws with crinkle and plain washers from the underside of the shelf.

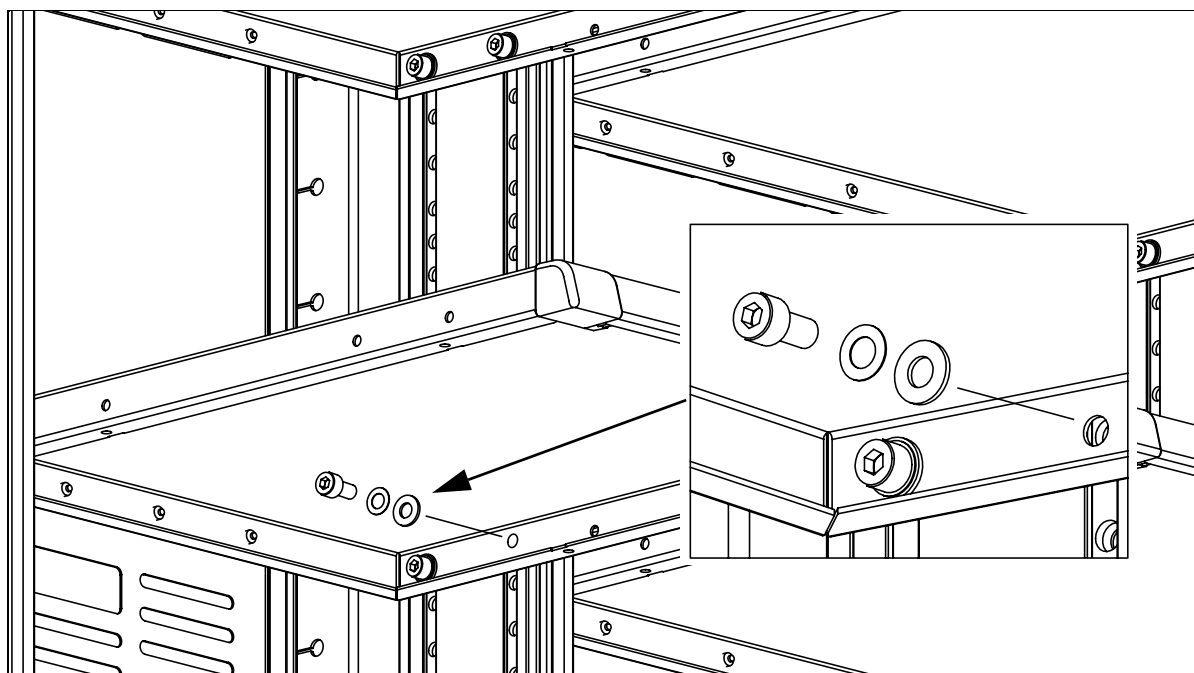


**Figure 4.2**

3. Locate the shelf at the new position and fit the four side fixing screws with crinkle and plain washers. Tighten all screws using a 6mm A/F L-wrench. It is recommended that after fitting, the screws are tightened to a torque of 10.5Nm (tool not provided).

### 4.3 Remote switch

The remote switch enables the power to the system components to be controlled from a single point. The switch is located beneath the top tray and connects to the remote switch connector on the separation transformer via a 2m cable.

The remote switch has an integral two-colour LED which illuminates whenever the transformer is connected to the mains supply. Yellow indicates 'standby', green indicates 'output on'.

**NOTE**

- The remote switch only controls the output socket on the transformer. To switch OFF the input power supply, set the remote switch to its 'stand-by' position, then disconnect the mains connector from the wall outlet socket.
  - In 'stand-by' condition, the transformer consumes a small amount of power, typically 4% of its full load rating. If it is anticipated that the system will not be used for a significant period of time, it is recommended that the mains connector is removed from the wall outlet socket to conserve energy.
1. The mobile workstation is supplied with the remote switch connected to the separation transformer and no assembly is required. However, check the connection (see Figure 4.3) is secure before completing full installation.

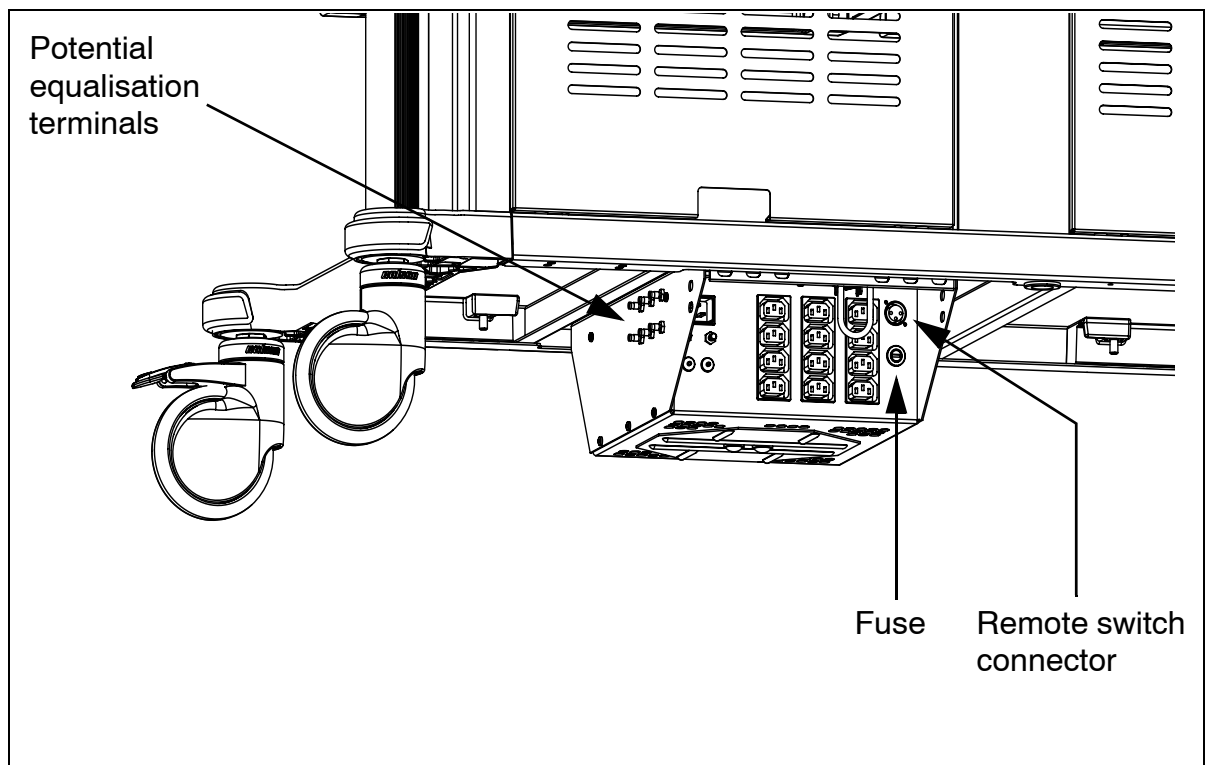


**Figure 4.3**

## **4.4 Equipment installation**

refer to section 4.1 for additional information regarding system installations.

### **CAUTION**

- To minimise risk of injury, it is recommended that two people, working together, place heavy items of equipment on the mobile workstation.
- High intensity light sources may need to be connected to a properly grounded AC power outlet and not one of the IEC power sockets on the mobile workstation, depending on the total system power rating.
- Ensure the fully installed system meets the requirements of EN IEC 60601-1-1:2001, Medical Electrical Equipment, Collateral Standard: Safety Requirements for Medical Electrical Systems. For advice, contact your Olympus representative or qualified service personnel.

### **NOTE**

Releasable cable straps are provided on the rear of each shelf and cable ties are provided to secure equipment power cables to the case of the transformer. Cable access holes are provided in the base of the mobile workstation. Excess lengths of cables should be coiled neatly and secured to the rear of a shelf using the cable straps provided.

1. Place items of equipment centrally on the shelving and connect according to individual instructions. The WM-DP1 mobile workstation is supplied with a universal IEC lead set to connect equipment on the mobile workstation to the transformer. Potential equalisation terminals are fitted to both sides of the transformer enclosure for connection to equipment potential equalisation terminals where fitted. Route all cabling neatly in the side column cable ducts on the extrusion and along the rear of the shelves, secure using the releasable cable ties (see Figure 4.4).

Centre column cable ducts are used for interconnection of equipment located on the base, intermediate and upper shelves.

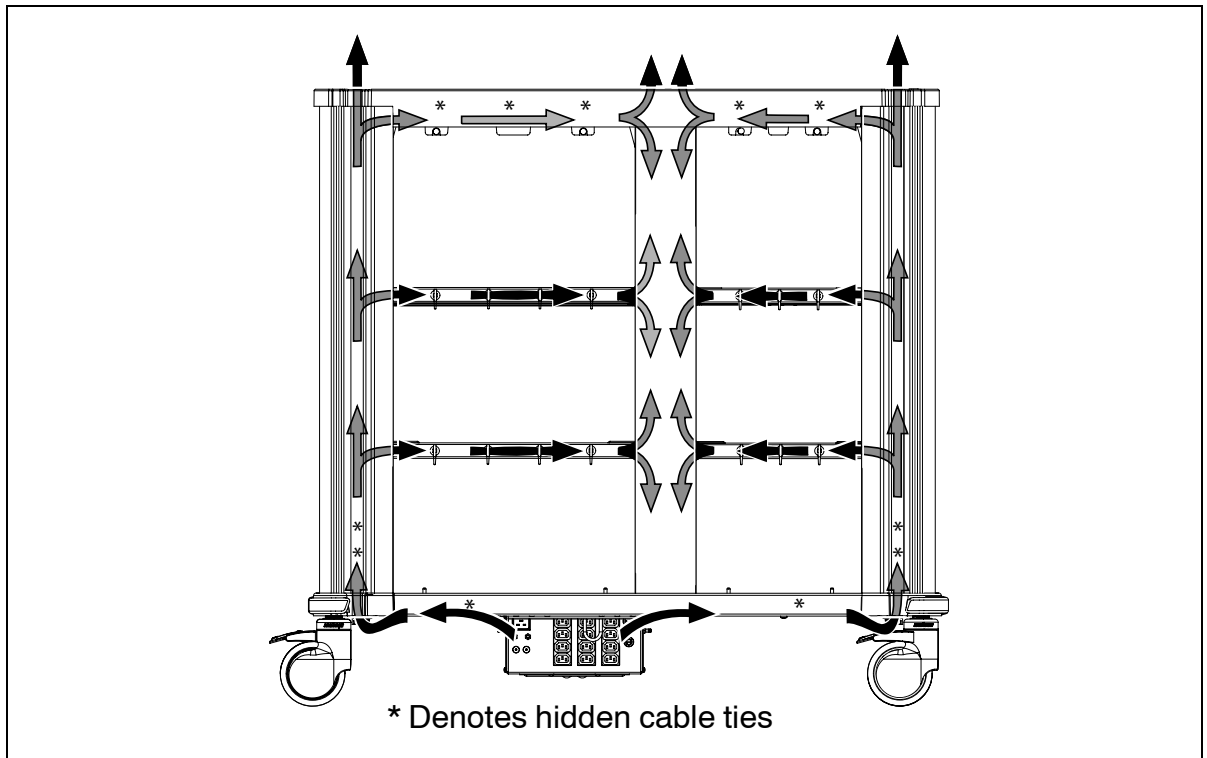


**Figure 4.4**

2. When all equipment is positioned on the workstation, install LCD monitor arms or control panels as required according to their instructions and noting the configuration diagrams given in Chapter 2 Warnings and Cautions.

**MAJ-181 only:** One MAJ-181 restrictor (supplied) must be fitted to each MAJ-181 being fitted, up to a maximum of two. The restrictor provides additional stability by preventing the monitor arm from swinging outside the footprint of the workstation. Refer to Section 4.8 for assembly.

**WARNING**

Do not use the MAJ-181 LCD monitor arm on the workstation without a restrictor fitted. Otherwise the workstation may lose stability and topple, causing equipment damage and/or personal injury.

3. Check that all equipment power ON/OFF switches are in the OFF position and connect the separation transformer (and light source, where separate) power supply cables to properly grounded AC power outlets. The power outlets should be located such that they are not obstructed when the mobile workstation is in its normal operating position. The remote switch LED will illuminate yellow indicating 'standby'.
4. Set the mobile workstation remote switch to the ON position, the LED will now illuminate green indicating 'output on'.
5. Set the power switches for the installed equipment to the ON position.

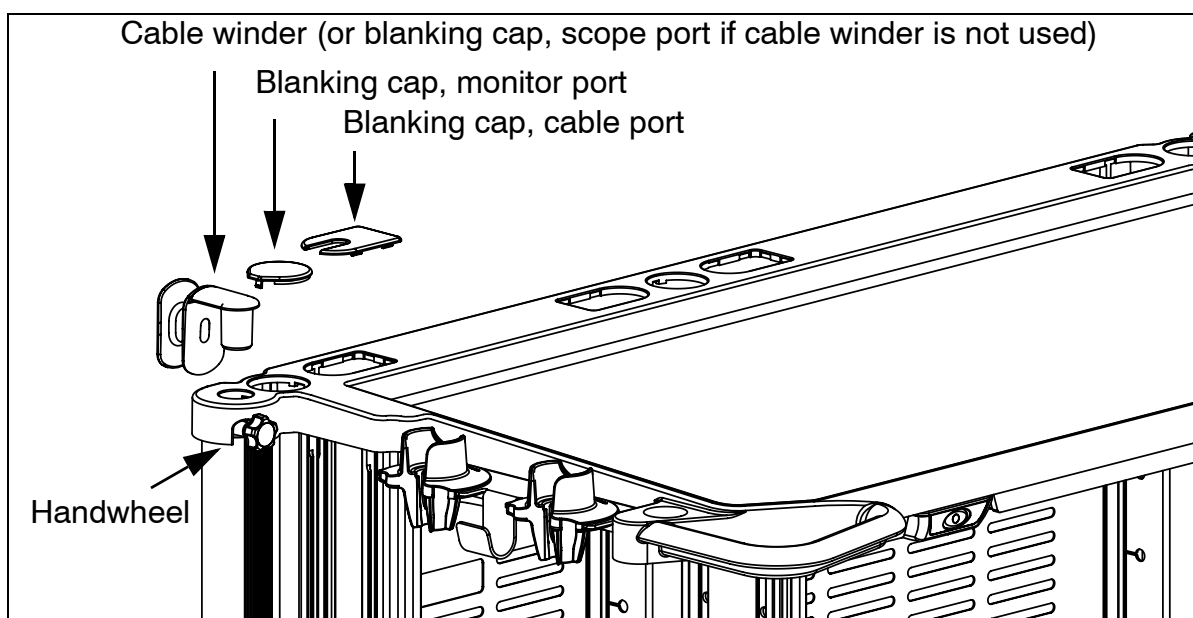
**CAUTION**

- Check that all installed equipment operates correctly before using the system 'on patient'.
  - The WM-T1 separation transformer incorporates a circuit to limit the input current surge when power is applied. Operating an input power ON/OFF switch several times in rapid succession may interfere with the correct functioning of this circuit and may cause the mains power supply protection to operate.
  - Ensure that the video system centre is switched OFF when attaching or removing the videoscope cable. Serious damage may result if the videoscope is connected with the video system centre switched ON.
6. When equipment installation is complete, fit the rear door(s) taking care not to trap any cables.

#### 4.5 Cable hanger and blanking caps

**NOTE**

- If the cable hanger is not required, fit one blanking cap to the left hand port in the top tray.
  - Blanking caps are provided for each of the accessory fittings and cable exits in the top tray. If accessories are fitted, the appropriate blanking cap will not be required and should be stored in case of future use.
1. The blanking caps locate in the positions shown in Figure 4.5 and can be removed/fitted if required.

**Figure 4.5**

2. The cable hanger locates into either left or right hand port in the top tray and is secured in the required position using handwheel as shown in Figure 4.5.

## **4.6 Water container holder**

1. The WM-DP1 mobile workstation is fitted with a water container bracket to hold two water containers (not supplied). The water container simply clips onto the bracket as shown in Figure 4.6.

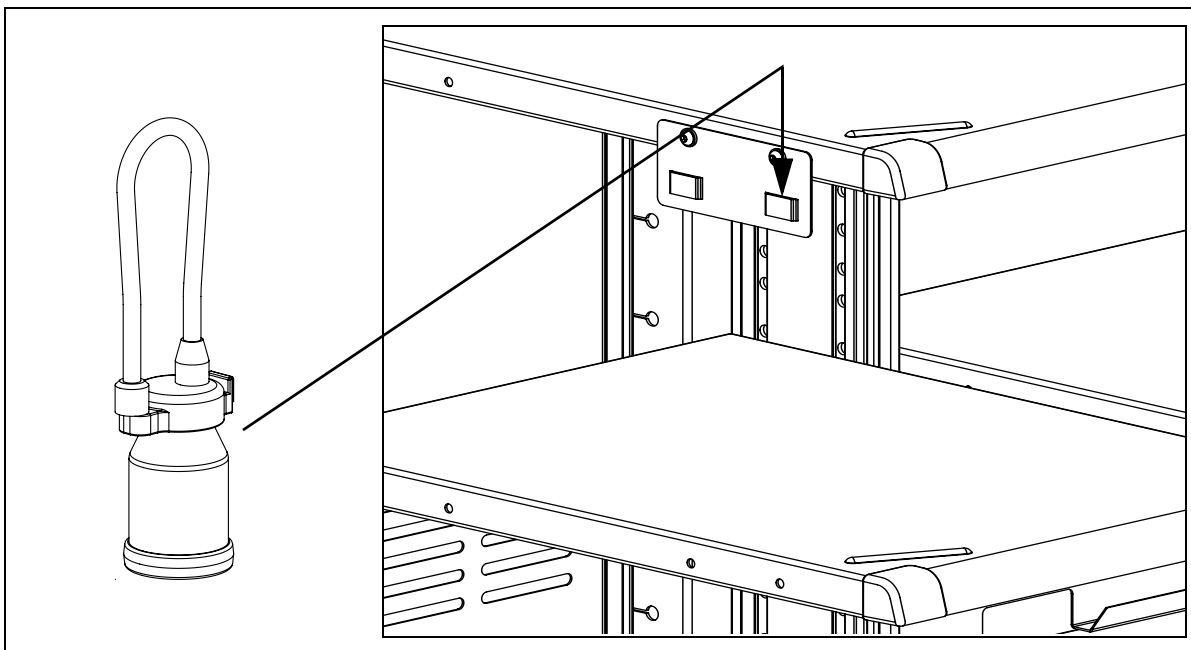


**Figure 4.6**

## **4.7 Rear panels**

1. When installation of equipment is complete, lift each rear panel in turn onto the locating studs on the base of the workstation (Figure 4.7) then push the top of the panel until the latch engages with an audible click.

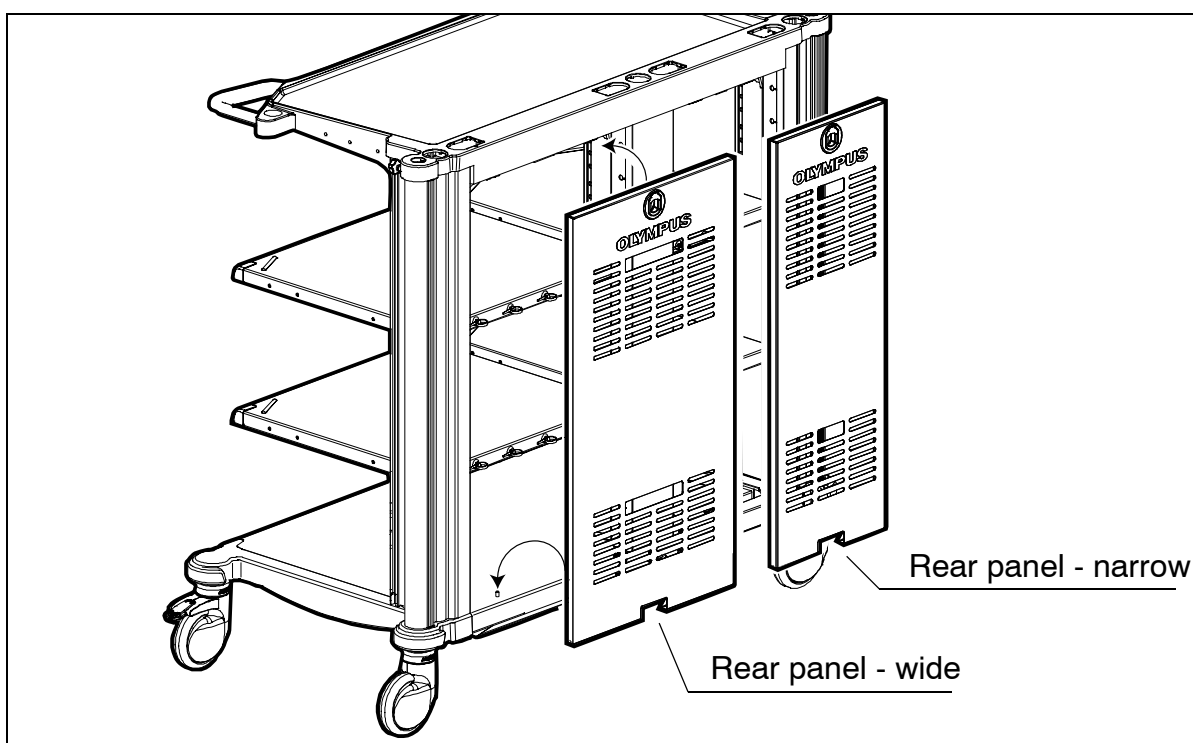


**Figure 4.7**

## **4.8 Fitting the MAJ-181 restrictor**

This procedure is only applicable if fitting a MAJ-181 LCD monitor arm to the WM-DP1 workstation.

### **WARNING**

- If using a MAJ-181 on the workstation, the restrictor supplied in this kit must be fitted to the MAJ-181 and is best assembled with the MAJ-181 in position on the workstation.
  - To maintain stability, before installing a second MAJ-181, ensure the first is assembled with the restrictor fitted.
  - Read the instruction manual supplied with the MAJ-181, it contains important information regarding proper care and use of the equipment.
  - The WM-DP1 should be used in accordance with the following. Otherwise, the workstation will be 'top heavy' and may lose stability and topple, causing equipment damage and/or personal injury.
    - Two MAJ-181 restrictors are supplied which must be fitted to MAJ-181 LCD monitor arm(s) if used.
    - LCD monitor arms and monitors should be installed after all other equipment is installed on an appropriate place on the workstation.
    - LCD monitor arms should not be installed or used to the rear of the workstation, see Figure 2.1.
    - Confirm that the workstation does not lose stability when the monitor arm is extended. If the workstation looks unstable, relocate heavy equipment from the upper shelf to the bottom shelf.
1. Referring to the MAJ-181 instruction manual, relocate the clamp support to another fixing hole in the support tube (see Figure 4.8) as the restrictor will be fitted through the top hole, then insert the MAJ-181 into the monitor port in the top tray of the workstation.

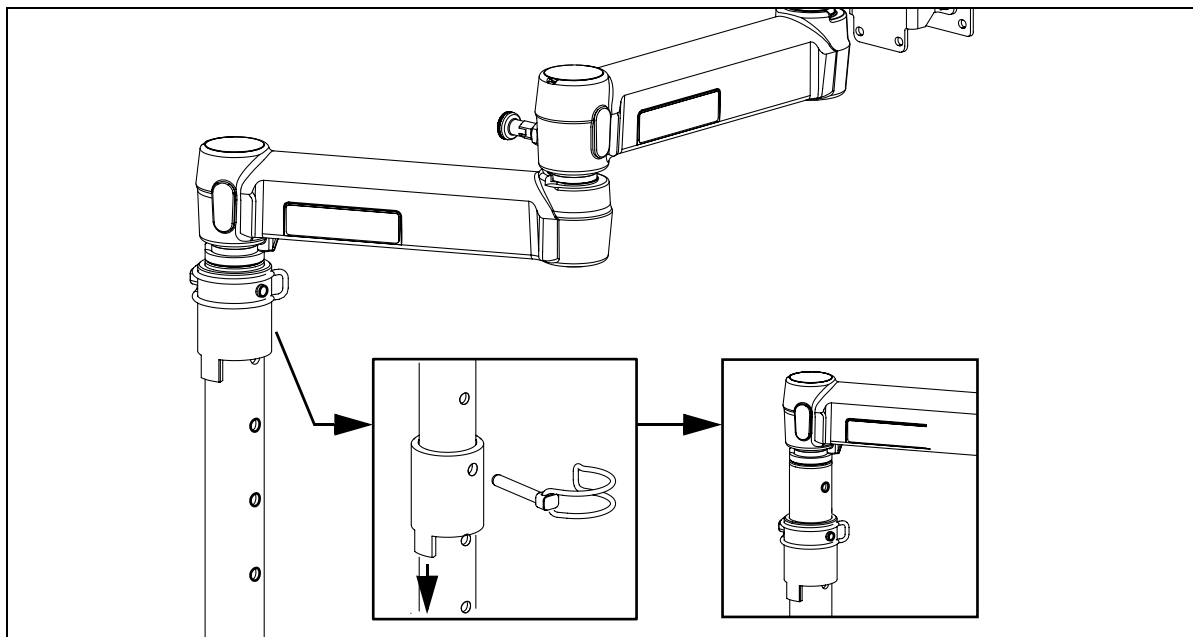


**Figure 4.8**

2. Referring to Figure 4.9, pull out the finger grip on the lower index plunger and rotate it 90°, the arm is now free to rotate. Rotate the arm until parallel with the top tray as shown.

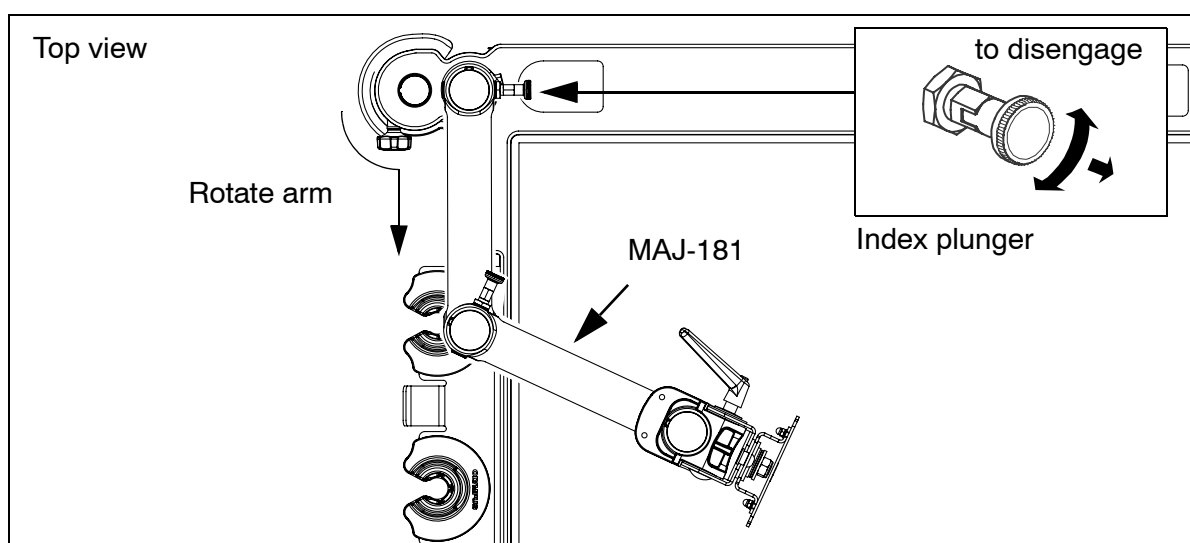


**Figure 4.9**

3. Remove the M8 screw to separate the MAJ-181 restrictor assembly.
4. Referring to Figure 4.10, secure the MAJ-181 restrictor - front to the MAJ-181 restrictor - rear through the uppermost hole in the monitor arm using the M8 coil washer, M8 plain washer and M8 x 50mm screw. Fully tighten the screw using the M6 A/F Allen key supplied.

**NOTE**

The monitor arm must be parallel to the top tray to ensure the tag on the monitor arm aligns with the cutout in the restrictor (Figure 4.10 inset).

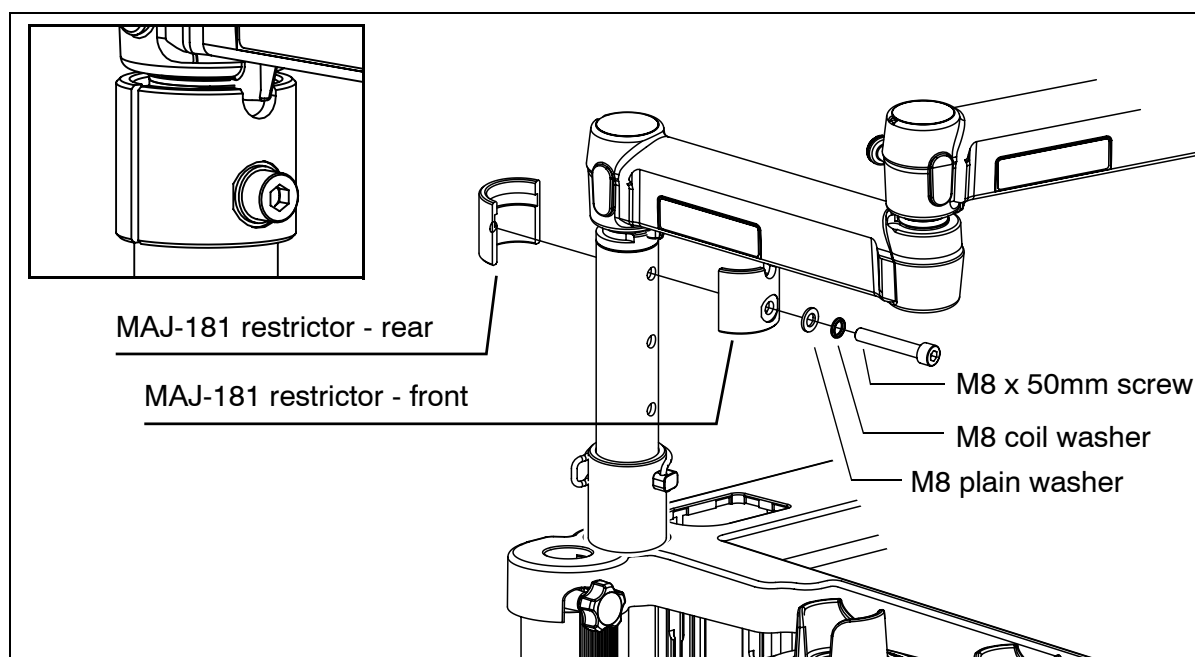


**Figure 4.10**

5. Repeat for second MAJ-181 if used.

## **Chapter 5   Inspection**

### **WARNING**

Should the slightest irregularity be suspected, do not use the mobile workstation and refer to Chapter 11 Troubleshooting. If the problem cannot be resolved, contact Olympus for service.

1. Check the power supply cable and plug for damage, twists, deformation or other irregularities.
2. Where antistatic castors are fitted, periodically check the electrical resistance of the conductive antistatic castors to assess antistatic effectiveness.
3. Check the security of castors at six-monthly intervals. If loose, contact Olympus for service.
4. Regularly check the shelf fixing screws and the fixing screws of any accessories that are fitted, particularly monitor mounts. If necessary, retighten the screws using the tools provided.

## Chapter 6 Operation

### 6.1 Operation

**WARNING**

- The WM-DP1 should be used in accordance with the following. Otherwise, the workstation will be 'top heavy' and may lose stability and topple, causing equipment damage and/or personal injury.
  - Two MAJ-181 restrictors are supplied which must be fitted to MAJ-181 LCD monitor arm(s) if used (refer to section 4.8).
  - LCD monitor arms and monitors should be installed after all other equipment is installed on an appropriate place on the workstation.
  - LCD monitor arms should not be installed or used to the rear of the workstation, see Figure 2.1.
  - Confirm that the workstation does not lose stability when the monitor arm is extended. If the workstation looks unstable, relocate heavy equipment from the upper shelf to the bottom shelf.

**CAUTION**

- Place the mobile workstation on a flat level surface and lock the castor brakes.
  - Confirm that any mounted instruments function normally before using the system on a patient.
1. Plug the power cord of the mobile workstation into a hospital-grade power outlet.
  2. Confirm that the power indicator on the remote switch lights yellow.
  3. When the remote switch is ON, confirm that the power indicator lights green.
  4. For use of Optional accessories, please refer to each accessory instruction manual.
  5. During use, do not position LCD monitor arms to the rear as shown below. Otherwise, the workstation may lose stability and topple, causing equipment damage and/or personal injury.

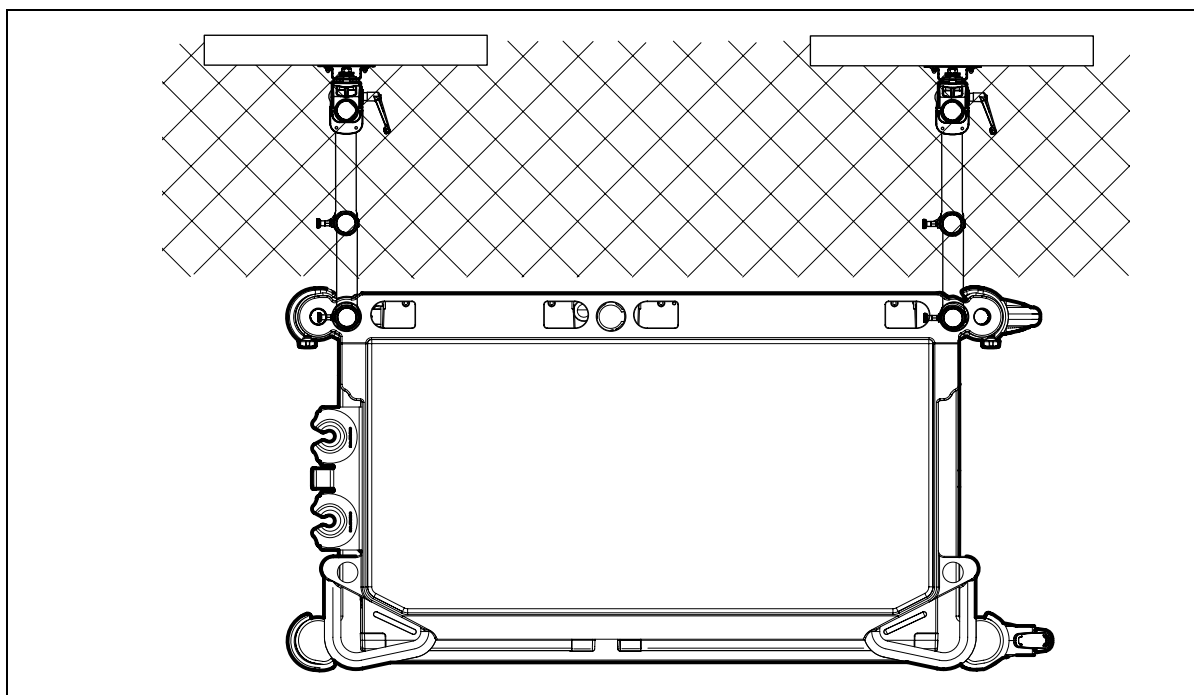


**Figure 6.1**

6. After use, turn off the remote switch.

## 6.2 Manoeuvring and Transportation

### **WARNING**

- The WM-DP1 should be manoeuvred or transported in accordance with the following. Otherwise, the workstation may lose stability and topple, causing equipment damage and/or personal injury.
    - Two people are required to safely manoeuvre or transport a loaded mobile workstation.
    - Do not manoeuvre or transport the workstation quickly or aggressively, especially when negotiating bumps.
    - Check that all cables are secure and clear of the castors.
    - All optional accessories fitted to the workstation should be placed in the stowage position in accordance with their instructions for use.
1. The mobile workstation has two diagonally located braked castors. Ensure both brakes are applied prior to use.
  2. Ensure both brakes are released before attempting to move the mobile workstation.
  3. Always manoeuvre the mobile workstation using the handles provided on the front of the top tray. Care must be exercised when moving it, particularly over uneven surfaces or trailing cables, to avoid tipping.
  4. Before attempting to move the mobile workstation outside the operating room, ensure that its mains cable is disconnected from the supply socket and is safely coiled away from the castors, and that the equipment housed on the mobile workstation is secure. Ensure that the endoscope is removed and transported separately and fluid containers are removed and emptied. Optional accessories such as LCD monitors or control panels, if fitted, should be rotated within the footprint of the mobile workstation and locked in position. Take particular care of any accessories (if fitted) which protrude from the frame.
  5. Two people are required to safely transport a loaded mobile workstation outside the procedure room. Particular care must be taken when moving up or down slopes to prevent loss of control of the mobile workstation.
  6. When the mobile workstation is fully loaded with equipment, do not attempt to 'park' it on slopes or inclines as the castor brakes may not be fully effective.
  7. It is recommended that the mobile workstation is manoeuvred over lips or door thresholds diagonally (see Figure 6.2) , that is one castor at a time, to minimise the potential for tipping.

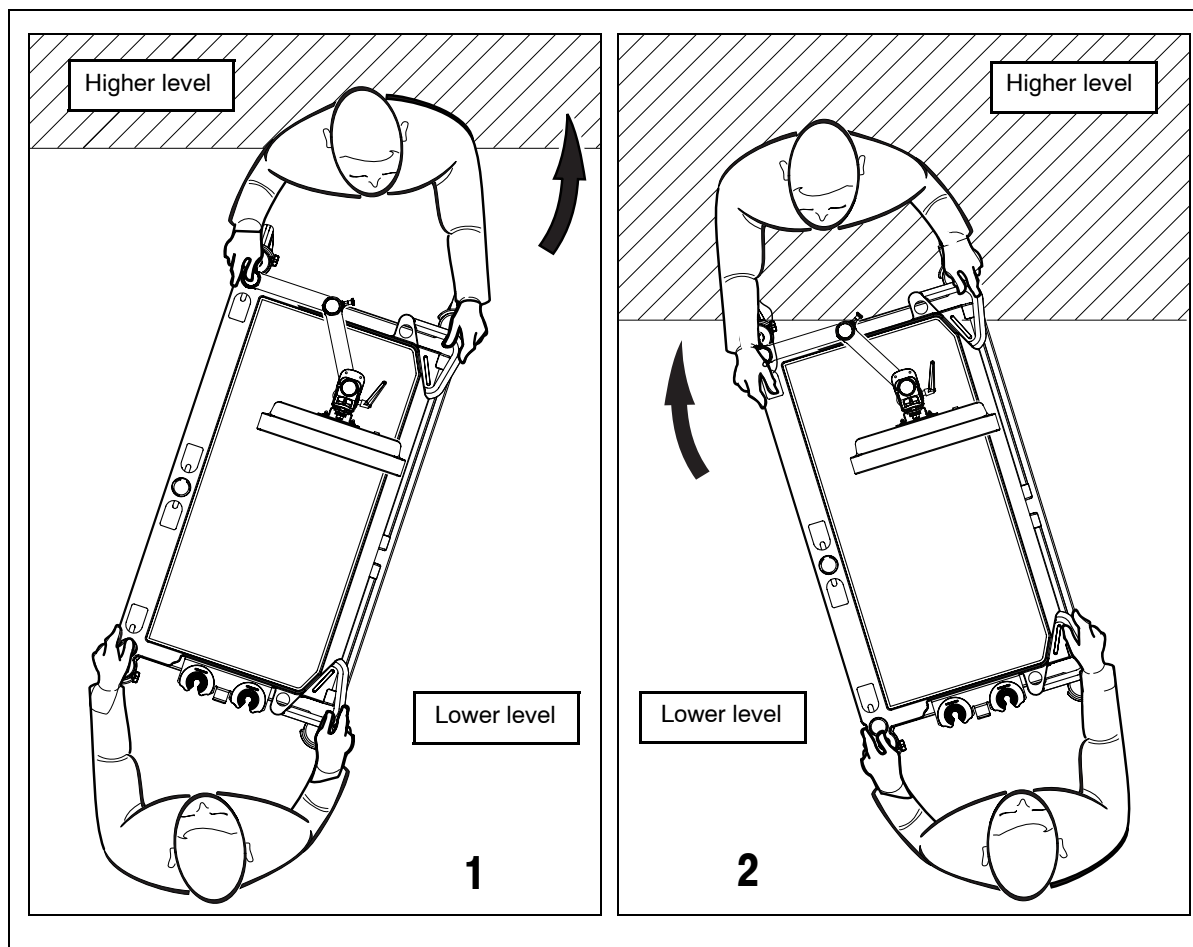


**Figure 6.2**

**NOTE**

Repeated transportation over uneven surfaces may result in damage to the equipment carried on the mobile workstation.

## Chapter 7 Care, Storage and Maintenance

### 7.1 Care

1. Clean the mobile workstation with a soft cloth or gauze moistened with a neutral detergent, then wipe over with a cloth dampened with 70% alcohol.
2. The umbilical holders should be removed and cleaned/sterilised before use by autoclaving (to a maximum of 138°C (280°F)) or disinfected by cold fluid immersion following solution manufacturer's instructions.

To remove the umbilical holder, squeeze and rotate to the left or right to disengage from the tabs on the bracket. To replace, locate the left or right side onto the tab and rotate into the holder until the second tab engages.

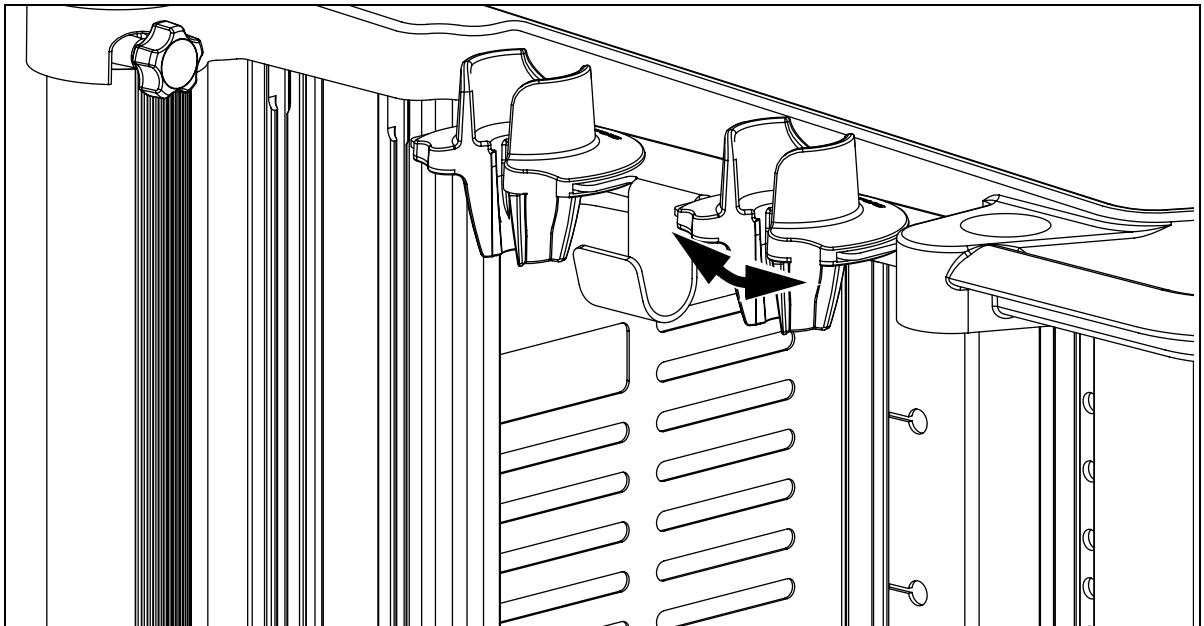


Figure 7.1

#### **WARNING**

- Should the equipment become soiled with blood or other potentially infectious materials, first wipe off all gross debris and then decontaminate the equipment using a surface disinfectant, otherwise, blood, mucus and other potentially infectious material from the patient could pose an infection risk. Confirm that the equipment is completely dry before use.
- Use personal protective equipment to guard against dangerous chemicals and potentially infectious material, otherwise, blood, mucus and other potentially infectious material from the patient could pose an infection risk. During cleaning, wear appropriate protective equipment, such as eye wear, face mask, moisture-resistant clothing and chemical-resistant gloves that fit properly and are long enough so that your skin is not exposed.

**CAUTION**

- Do not allow any fluids into contact with electrical equipment installed on the mobile workstation.
- Do not use harsh or abrasive cleaning materials on the mobile workstation.
- Ensure all surfaces are thoroughly dried before reusing the mobile workstation.

## **7.2 Storage**

1. The WM-DP1 mobile workstation should be stored within the environmental conditions given in Chapter 8.

## **7.3 Maintenance**

1. Check the security of castors at six-monthly intervals. If loose, contact Olympus for service.
2. Where antistatic castors are fitted, periodically check the electrical resistance of the conductive antistatic castors to assess antistatic effectiveness.  
  
Periodically clean each castor wheel to remove non-conductive material such as cleaning wax and floor polish as these will impair the antistatic effectiveness of the castors.
3. Regularly check the shelf and securing screws of any accessories that are fitted, particularly monitor platforms. If necessary, retighten the screws using the tools provided.
4. The separation transformer should undergo routine checks for electrical safety and correct function annually or as dictated by local policy. Typical checks would include inspection of the power supply cable for damage, and tests for earth continuity and insulation resistance. Also check (listen) for correct operation of the inrush limiting circuit (see Chapter 10) when power is applied.
5. Annually, check that the fuse holder cap on the transformer (Figure 4.3) is correctly fitted. If the fuse has been replaced and the cap is not sufficiently tightened, there is a possibility that the fuse holder will overheat. When replacing the fuse, ensure the fuse holder cap is tightened using a 6mm to 8mm flat bladed screwdriver. The recommended tightening torque is 0.5Nm.
6. If it becomes necessary to remove the separation transformer from the mobile workstation for testing, disconnect all cables from the transformer then place supports between the transformer and the floor at the front and rear. Remove four M8 nuts using a 13mm A/F socket, then carefully remove the supports and lower the transformer to the floor.

**WARNING**

Do not extend any monitor arm outside the footprint of the workstation when the transformer is removed. Otherwise the workstation will be 'top heavy' and may lose stability and topple, causing equipment damage and/or personal injury.

**CAUTION**

- The transformer weighs up to 28kg, and care should therefore be exercised during handling. When lifting the transformer, it is recommended that the assistance of a second person is sought.
- Removal of the transformer should only be undertaken by suitably qualified personnel.
- Electrical safety checks should only be performed by suitably qualified personnel.

## Chapter 8 Specifications

### 8.1 WM-DP1 mobile workstation

|                                       |                                                                                                  |                                                                                                                                    |  |
|---------------------------------------|--------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------|--|
| Product name                          | WM-DP1 mobile workstation                                                                        |                                                                                                                                    |  |
| Dimensions (mm)                       | Height:                                                                                          | 1192<br>1370 (scope in lowest position)<br>2140 (scope in highest position)<br>1826 max (with 19" LCD monitor in highest position) |  |
|                                       | Depth:                                                                                           | 655                                                                                                                                |  |
|                                       | Width:                                                                                           | 1238                                                                                                                               |  |
| Weight                                | 120kg unladen, including fitted transformer.                                                     |                                                                                                                                    |  |
| Load capacity<br>(evenly distributed) | Top tray                                                                                         | 10kg                                                                                                                               |  |
|                                       | Intermediate shelves                                                                             | 26kg each                                                                                                                          |  |
|                                       | Base panel                                                                                       | 60kg                                                                                                                               |  |
|                                       | Total load                                                                                       | 180kg maximum (inclusive of attached accessories and equipment)                                                                    |  |
|                                       | <b>NOTE:</b> Equipment stored on the mobile workstation should not exceed the size of the shelf. |                                                                                                                                    |  |
| Castors                               | WM-DP1 p/no K10003727<br>4 x 125mm antistatic, two with brakes.                                  |                                                                                                                                    |  |
|                                       | WM-DP1 p/no K10003726, K10003728, K10003729<br>4 x 125mm non-antistatic, two with brakes.        |                                                                                                                                    |  |
| Ambient temperature                   | Storage:                                                                                         | -40°C to +70°C (-40°F to +158°F)                                                                                                   |  |
|                                       | Operation:                                                                                       | 10 - 40°C (50 - 104°F)                                                                                                             |  |
| Relative humidity                     | 95% maximum @ 40°C (104°F) non-condensing                                                        |                                                                                                                                    |  |
| Atmospheric pressure                  | Storage:                                                                                         | 23.5-106 kPa (3.4-15.37lbf/in <sup>2</sup> )                                                                                       |  |
|                                       | Operation:                                                                                       | 70-106 kPa (10.15-15.37lbf/in <sup>2</sup> )                                                                                       |  |

### 8.2 Separation transformer (WM-T1)

|                          |                                |           |                                                         |
|--------------------------|--------------------------------|-----------|---------------------------------------------------------|
| Product name             | Olympus Separation Transformer |           |                                                         |
| Identification           | Market                         | USA       | UK, Europe, Rest of the world                           |
|                          | Model No.                      | MAJ-174   | MAJ-175                                                 |
|                          | Part No.                       | K10000290 | K10000291                                               |
| Power input requirements | Input voltage                  | 110-120V  | 220-240V                                                |
|                          | Frequency                      | 60Hz      | 50/60Hz                                                 |
|                          | Power input (max)              | 1300VA    | 1900VA                                                  |
|                          | Power cable part No.           | K10001002 | K10001003 (UK)<br>K10001004 (Europe)<br>K10001005 (RoW) |
| Power output             | Maximum load                   | 1250VA    | 1800VA                                                  |

## Specifications

|                          |                                                |                                                                                                                                                                                                                                                                                                                                                                                                                               |                                             |        |
|--------------------------|------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------|--------|
| Overload protection      | Input circuit breakers                         |                                                                                                                                                                                                                                                                                                                                                                                                                               | 2 x 13A                                     | 2 x 9A |
|                          | Output fuse                                    |                                                                                                                                                                                                                                                                                                                                                                                                                               | T15AH                                       | T10AH  |
|                          |                                                |                                                                                                                                                                                                                                                                                                                                                                                                                               | Tighten to 0.5Nm reference IEC 60127-6:1994 |        |
| Potential equalisation   | Terminals fitted                               | 2 at input, 2 x 6 at output                                                                                                                                                                                                                                                                                                                                                                                                   |                                             |        |
| Classification           | Standards compliance                           | The Separation Transformer conforms to the relevant requirements of: EN IEC 60601-1/<br>EN IEC 60601-1-1:2001, Annex EEE/UL 60601-1 and CAN/CSA Std. No. C22.2 No. 601.1-M90                                                                                                                                                                                                                                                  |                                             |        |
|                          | Type of protection against electric shock.     | Class I equipment.                                                                                                                                                                                                                                                                                                                                                                                                            |                                             |        |
|                          | Degree of protection against explosion         | None, the Separation transformer should not be used within the zone of risk of flammable gases                                                                                                                                                                                                                                                                                                                                |                                             |        |
|                          | Degree of protection against ingress of water. | IPX0 as defined in EN IEC 60529:1992, ordinary equipment.                                                                                                                                                                                                                                                                                                                                                                     |                                             |        |
|                          | Mode of operation                              | Continuous                                                                                                                                                                                                                                                                                                                                                                                                                    |                                             |        |
| Environmental conditions | Ambient temperature                            | Storage: -40°C to +70°C (-40°F to +158°F)<br>Operation: 10 – 40°C (50 - 104°F)                                                                                                                                                                                                                                                                                                                                                |                                             |        |
|                          | Atmospheric pressure                           | Storage: 23.5-106 kPa (3.4-15.37lbf/in <sup>2</sup> )<br>Operation: 70-106 kPa (10.15-15.37lbf/in <sup>2</sup> )                                                                                                                                                                                                                                                                                                              |                                             |        |
|                          | Relative humidity                              | 95% maximum @ 40°C (104°F) non-condensing                                                                                                                                                                                                                                                                                                                                                                                     |                                             |        |
| Regulatory status        | European Economic Area (EEA)                   |  220-240V units are CE marked in accordance with Directive 93/42/EEC of 14 June 1993 concerning medical devices, as an accessory to a medical device, Class I. Year of manufacture is given in first two digits of serial number.                                                                                                          |                                             |        |
| End of Life              |                                                | <br>In accordance with European Directive 2002/96/EC on Waste Electrical and Electronic Equipment, this symbol indicates that the product must not be disposed of as unsorted municipal waste, but should be collected separately. Refer to your local Olympus distributor for return and/or collection systems available in your country. |                                             |        |

The Olympus WM-DP1 mobile workstation and separation transformer is manufactured in the UK by KeyMed (Medical & Industrial Equipment) Ltd.

## **Chapter 9 Spares**

**NOTE**

In order to maintain standards compliance, it is important that replacement components should have the same specification as those fitted originally. This can best be guaranteed by using only those spare parts and components specified and supplied by Olympus.

1. If any item becomes damaged or lost, contact Olympus for replacement.

## **Chapter 10 Technical Description**

The block diagram shown in Figure 10.1 shows the different sub-units within the Separation Transformer.

The mains cable connects to the transformer through a high current IEC-320 style connector, allowing it to be easily replaced if it becomes damaged during use. It is secured to the transformer by a pair of clamps, to prevent accidental disconnection during use. The protective earth terminal connects to the metal enclosure of the unit and the output socket earthing system; the line and neutral conductors connect to the primary side of the transformer via two thermal circuit breakers and an inrush limiting circuit.

As with any transformer, the primary circuit will draw an inrush current surge when it is connected to the mains supply, which can sometimes be very large, depending on the magnetic state of its core at the instant it is powered. The inrush limiting circuit inserts a high power thermistor in series with the primary winding to limit the initial surge, dissipating it as heat. After approximately 0.5 seconds a relay closes (producing an audible 'click') to by-pass the thermistor, both to avoid any steady-state losses that would adversely affect the load regulation and to allow it to cool in readiness for the next switch-on.

The transformer is wound with a nominal input-to-output ratio of 1:1, with concentric primary and secondary windings. An additional low voltage secondary winding powers the circuit for the remote switch. Electrical separation between windings is maintained by overlapping layers of "Nomex" and "Melinex" tapes.

The secondary winding supplies power to the separated output sockets via a fuse to protect the unit against short-circuit faults in the external equipment. An additional socket enables a remote switch to be connected if required, operating a relay to control the power to the output sockets. This provides a convenient way of turning the entire system (apart from the transformer itself) on or off from a central point on the mobile workstation. When the remote switch is not connected, the outputs default to the permanently energised state. To isolate the unit from the mains supply, set the remote switch to its stand-by' position, then disconnect the mains connector from the wall outlet socket.

Potential equalisation terminals are provided adjacent to the input cable and either side of the top cover, for use where local regulations require the enclosures of each part of the system be connected to a common earth point, independently of the mains supply cables.

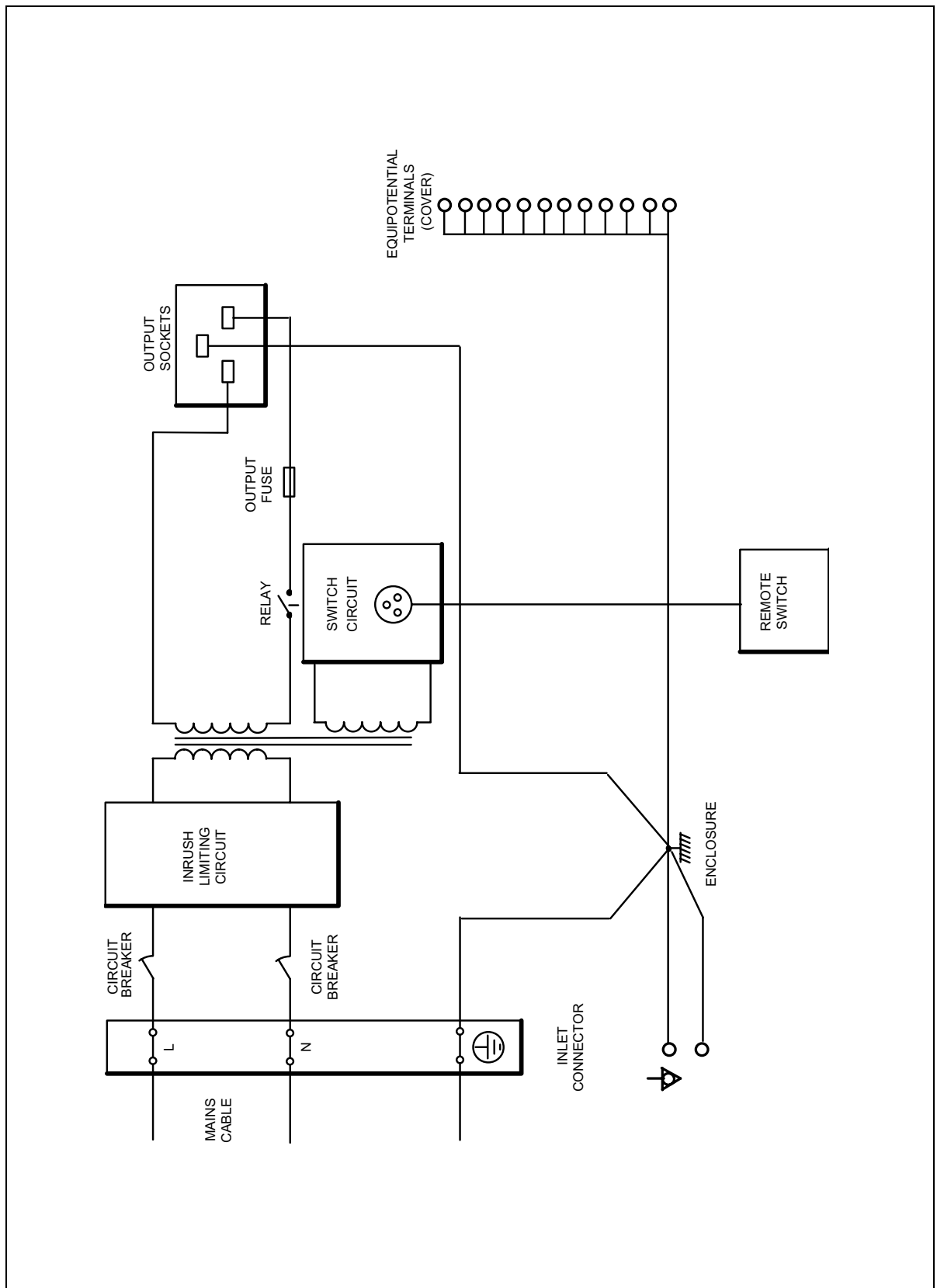


Figure 10.1

## Chapter 11 Troubleshooting

| Problem                                                 | Possible cause                                                                                            | Remedy                                                                                                                                                |
|---------------------------------------------------------|-----------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|
| No power to separation transformer                      | Separation transformer not connected to AC wall outlet                                                    | Connect transformer cable to AC wall outlet                                                                                                           |
|                                                         | No power at AC wall outlet                                                                                | Check power supply to AC wall outlet                                                                                                                  |
| Output fuse blows                                       | Item of equipment connected to transformer is faulty                                                      | Disconnect transformer from power supply. Locate and repair faulty equipment. Replace output fuse and reconnect all equipment.                        |
| Circuit breaker(s) 'trip'                               | Combined rating of equipment connected to power sockets exceeds the maximum VA rating of the transformer. | Check combined rating is within the maximum limit, disconnect equipment if necessary. Reset circuit breaker(s) by pressing in circuit breaker button. |
| Interference to equipment connected to the transformer. | Magnetic - proximity of sensitive equipment to transformer magnetic field.                                | Relocate sensitive equipment to a higher shelf.                                                                                                       |
|                                                         | Electrical - typically distortion / interference on monitor display when equipment is operated.           | Check system for damaged cables or connections.                                                                                                       |
|                                                         | Electromagnetic - interference from other systems.                                                        | As above, plus investigate source of interference.                                                                                                    |

If the problem cannot be resolved, contact Olympus for service. There are no user-serviceable parts inside the separation transformer. This equipment must not be modified without written authorisation from Olympus.

## **Chapter 12 End of Life**

Equipment which has reached the end of its useful life should be disposed of according to local regulations, refer to section 8.2 for additional information.



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